Enterprise Infrastructure Projects

Network Expansion Projects

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Enterprise Systems Services Centers Project

Status and Plans

Mike Boyer & Carl Hotvedt

ITSD Infrastructure Projects Team

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Topics

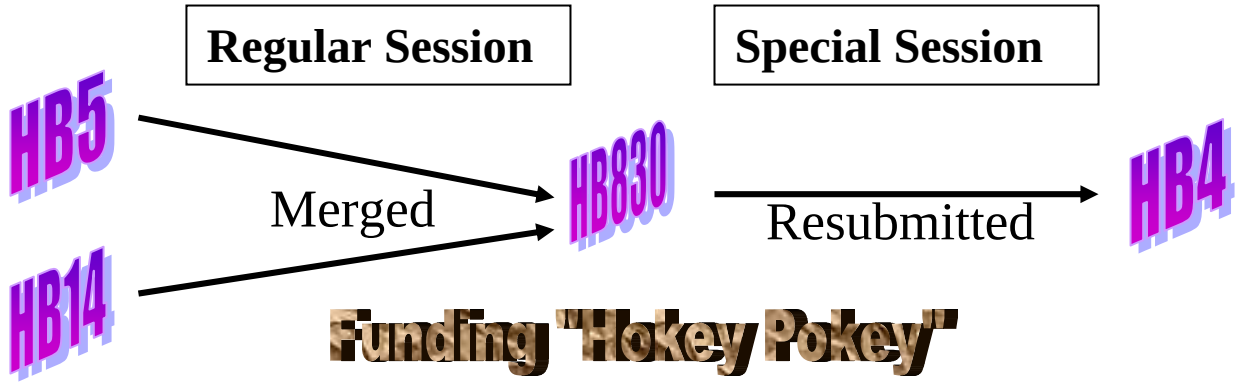
- Legislation and funding background
- Network Expansion Project Status/Plans
- ESSC Project Status/Plans
- Questions

Legislative Background

- EPP Items
  - (Northern Tier) Network Expansion - $7,823,000
    - Five Subprojects (Remote upgrades, Internet expansion, network mgmt tools, upgrade of campus ring, segregation of non-State DMZ)
    - Included acquiring a dark fiber backbone
    - Combined Network Expansion ($6.7 million) and Northern Tier Network ($3.2 million)
      - Removing overlaps eliminated $2.1 million
  - Enterprise Systems Services Centers - $24,150,000
    - Based on ESSC Concept Document – March 2006
      - Helena Center
      - Helena office building
      - Remote (Eastern Montana) Center

Legislative Background

- Bills Introduced
  - Enterprise Systems Services Centers – HB5
    - Long Range Building Subcommittee (Appropriations)
    - One of Governor's key legislative initiatives
  - (Northern Tier) Network Expansion – HB14
    - Also heard by LRB
  - HB14 "the IT bill"
    - HB14 included all IT projects over $3 million
    - New concept born of the MITA audit
- The unusual path:

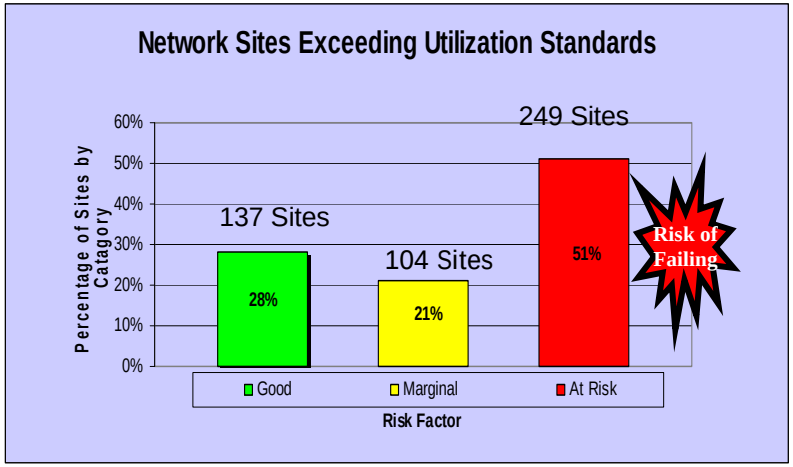


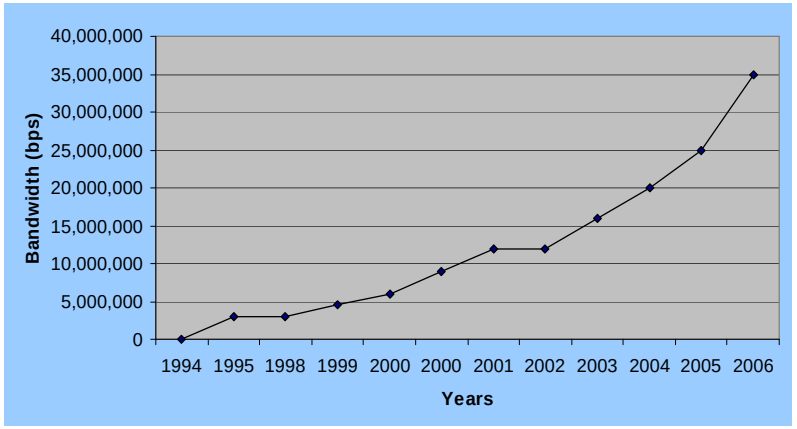
Legislative Background

- Enterprise Systems Services Centers
  - Data center need recognized
    - Mitchell Building issues
  - Objections to office component
  - Funded at $14,500,000 ($9,650,000 under the request)
- (Northern Tier) Network Expansion
  - Telecomm industry objected to use of Northern Tier dark fiber for State backbone
  - Network Expansion funded at original $6,687,000
    - Including operational costs for FY08-09
  - Northern Tier use limited to University research & education network
    - Funded at $1,136,000

Network Expansion Project- WHY?

- Congestion
- Utilization Growth
- New Services
- Security





Network Expansion Project Status/Plans

- Five subprojects
  1. Remote site upgrades
  2. Internet capacity upgrades
  3. Capitol Campus fiber upgrade
  4. Network management tools
  5. Non-State Traffic DMZ
- Architecture-based
  - Session earlier this morning

Remote Site Upgrades

- Transport Services RFP
  - Next generation of technology beyond current Frame-Relay and ATM
  - Responses due November 30th
  - Contract Expires November 30, 2008
- Goals are to reduce congestion, improve performance and support convergence (QoS).
- Starting in Spring ‘08

Internet Capacity Upgrades

- Multiple Internet Portals, One in Helena, the Second in the Billings Network Aggregation Center.
- Supports Automatic Failover and Load Balancing
- Equipment installed and operational.
- Waiting on Bandwidth between Portals.
- 20Mb increase each quarter starting 1/09
- Budget supports up to 150Mb at each site

Capitol Campus Fiber Upgrade

- Extend Single Mode Fiber to:
  - Governor's Mansion, Teachers Retirement, Old Livestock Building Capitol Annex, OPI, Multiple office buildings on 8th Ave.
- Improve performance
- Redundant Connectivity
- Funds trenching, conduit and fiber
- Projected Cost: $108,007

Network Management Tools

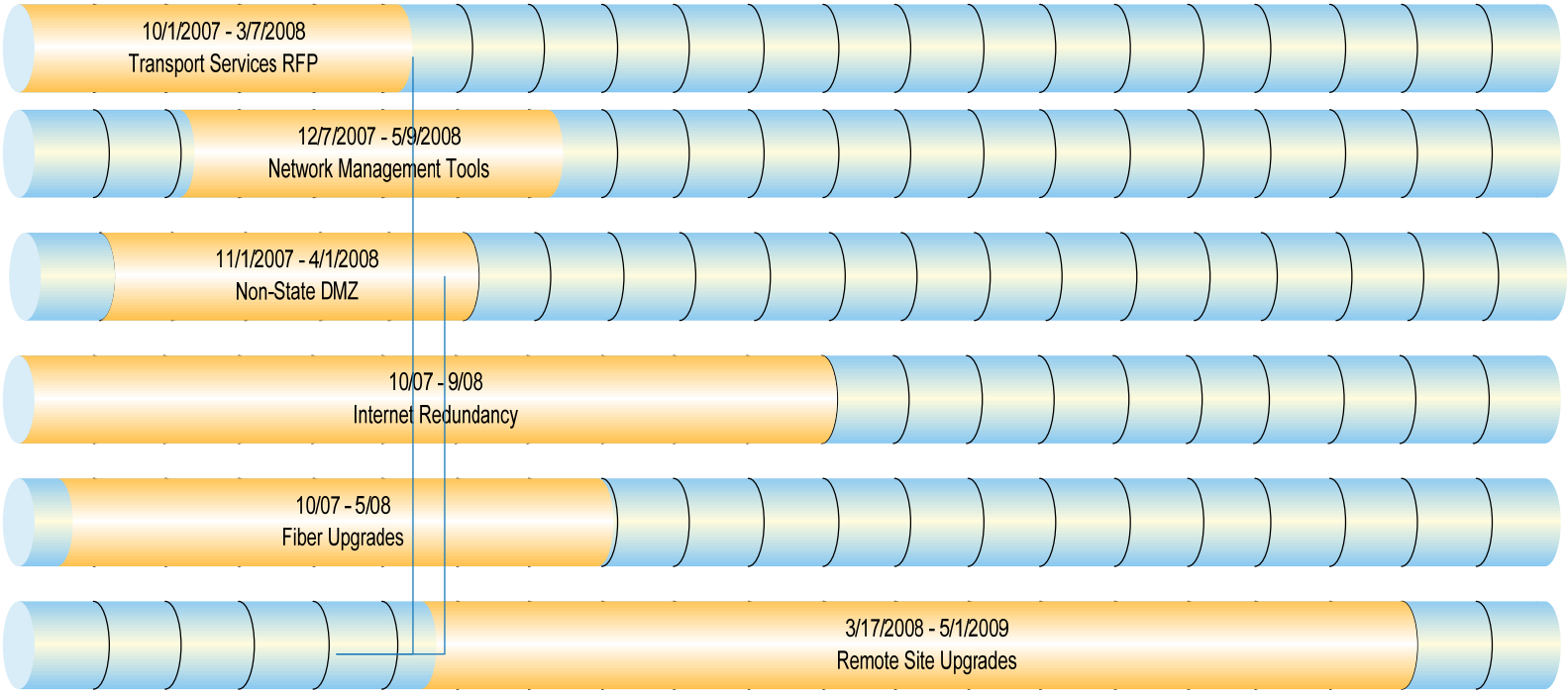
- Objectives:
  - Expand ability to monitor Helena and Billings network aggregation centers.
  - Event Correlation and logging.
  - End to end analysis
  - Pre-deployment Planning
  - Enhanced wireless management including RF
  - Network Optimization through Bandwidth Management

Non-State DMZ

- Traffic segregated into separate DMZ Zones based on Security Policies and Procedures

- Separation of State and non-State Traffic
  - Local units of government
  - Qualifying non-profits
  - Contractors
  - Others

Network Expansion Project Time Frames



10/1/2007

6/30/2009

Major Risks

- Telecommunications Infrastructure
  - Types of Services
  - Cost of Services

- Personnel Resources
  - Operational vs. Project priorities
  - Site conversions & upgrades?
  - Potential Solutions include use of agency IT staff and vendor personnel

ESSC Business Objectives

- Security
  - Safeguard the IT assets of the State against physical threats and cyber threats
- Continuity of government
  - Assure continuous processing of critical systems
- Improved services
  - Manage availability to meet customer requirements
- Efficiency of services
  - Make high quality IT operations available to all State organizations

ESSC Status & Plans

- Proposal in a nutshell:
  - Build two ESSCs
    - Helena site – replace Mitchell Bldg data/network center
      - 12,000-15,000 sf
    - "Eastern MT" site – peer site for critical workload; in a different seismic risk zone
      - 5,000-6,000 sf
  - "2N" capacity/redundancy for critical workload
  - "Non stop" processing for critical workload
    - Critical data mirrored between sites
    - Automated failover during an incident
  - Non-critical workload handled in Helena ESSC
  - Operations Center in Helena, minimal staff in East site
  - Both sites to have Tier III characteristics
    - Together they approach Tier IV

Premium Service

Standard Service

ESSC Design Activities

- Architecture & Engineering consultants
  - Design teams solicited in July – 14 proposals
  - Short list of 5 interviewed in September
  - Selection made and contract completed in October
    A&E Architects (lead), GPD, Robert Peccia & Assoc, Total Site Solutions (over 2,500 data center projects)
  - Design kick-off held December 3-4
  - Additional sessions planned
    Will be involving agency representation

ESSC Key Features

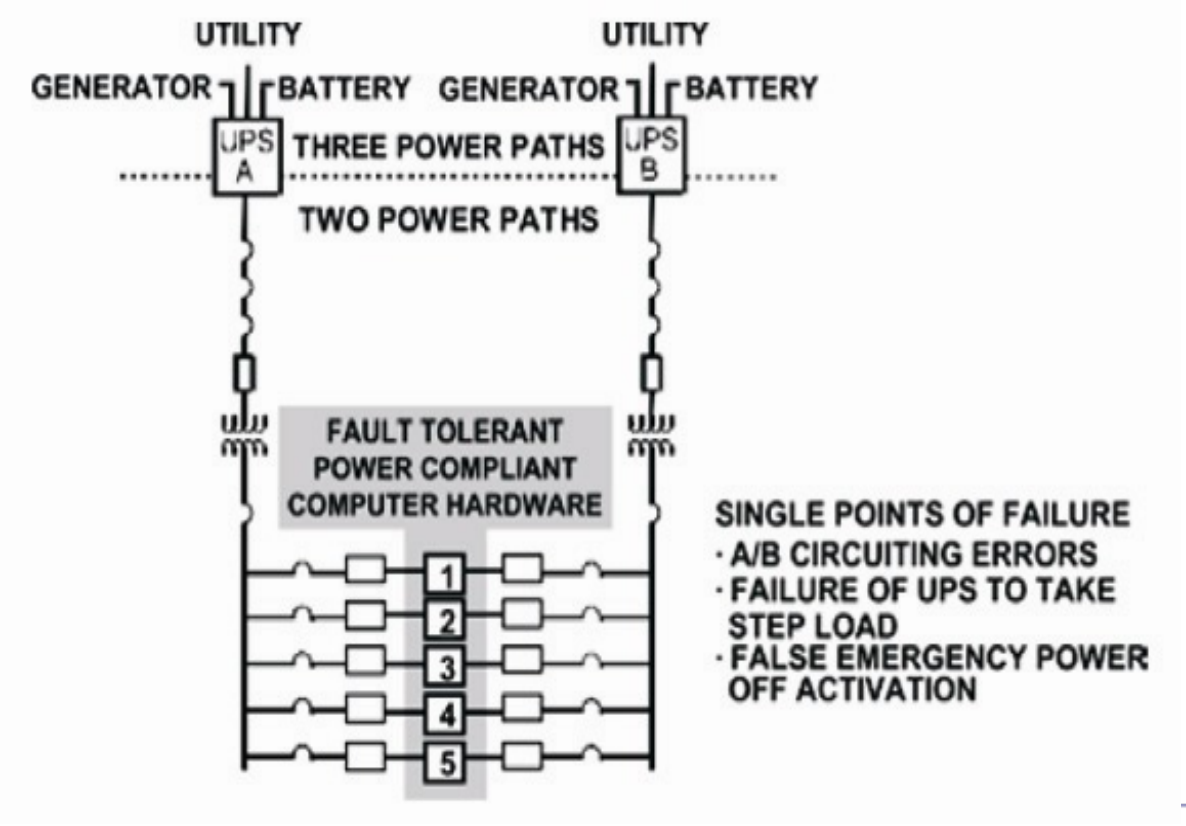
- Physical security
  - Topographical/external access obstacles
  - Building designed to control access
  - Limited staff access
  - Multi-factor authentication
- Redundant infrastructure
  - Power from “source to server”
  - Cooling
- Energy efficiency/environment friendly

ESSC Design Objectives/Principles

- Modular design for ease/low cost of expansion
  - For both the building envelope and raised floor
- LEED “Green” characteristics
  - “Leadership in Energy and Environmental Design”
  - Low impact building (air, water, energy, pollution)
  - Power best practices to reduce demand
  - Cooling efficiency
    - Heat recovery
    - Ambient air use
- Uptime Institute Tier III/IV availability characteristics
  - Tier III “Concurrently maintainable site infrastructure”; multiple power & cooling paths, one active, down <1.6 hours/year
  - Tier IV “Fault tolerant site infrastructure”; multiple active power & cooling paths, redundant components, down <0.4 hours/year

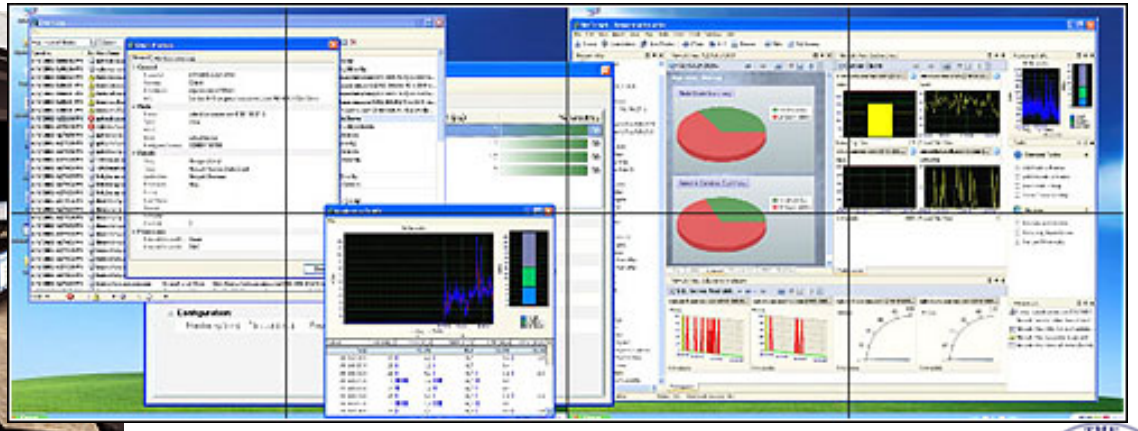
The Ideal – “No” Single Point of Failure

Dual Power Path: Typical of Tier III and Tier IV Site Infrastructure Designs, Requires that computer hardware (indicated by numbered boxes) be Fault-tolerant Power Compliant.



Misc. Items of Interest

- Biometric security – reduced access
- 24-36” Raised floor
- 500-800 watts/sf power
- Operations Center – critical to Service Management
  - Integrate monitoring/incident mgmt/problem mgmt/change mgmt

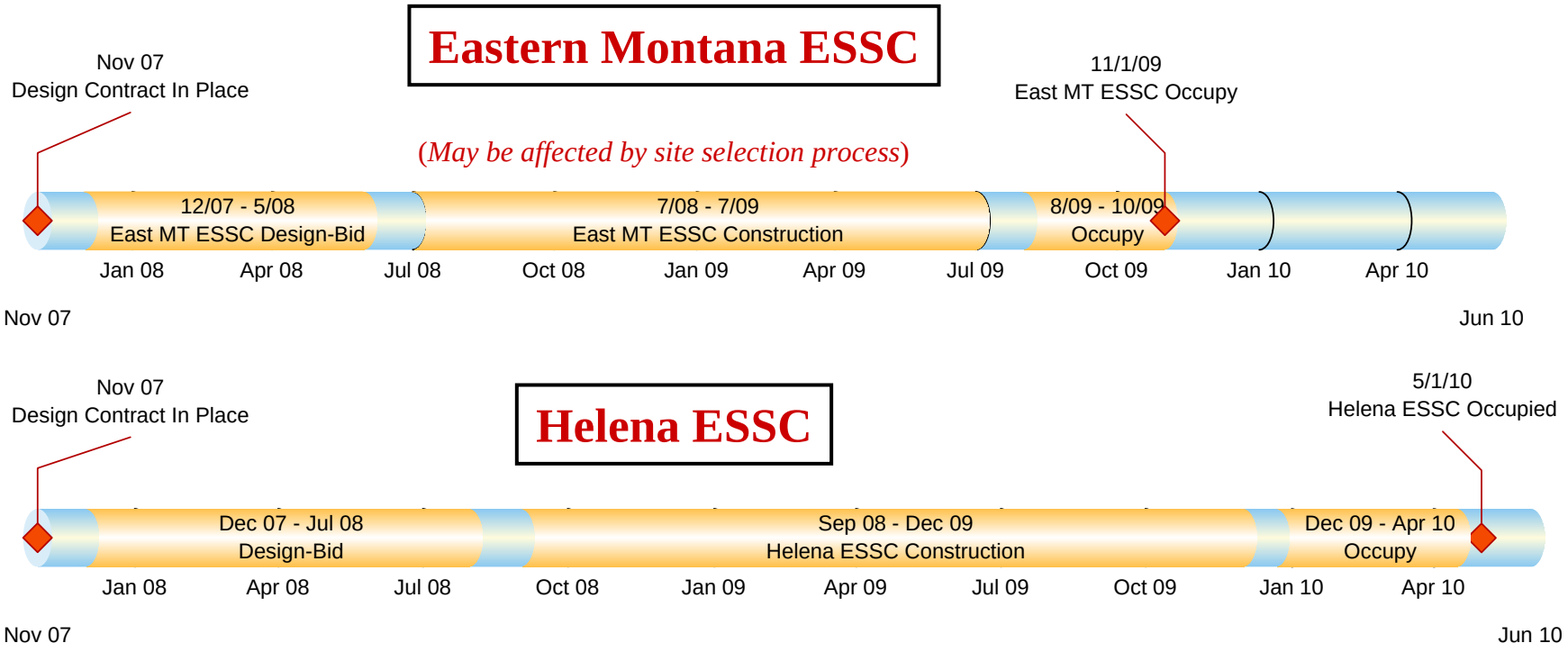


ESSC Major Activities & Targets

- Requirements definition and conceptual design: Feb ’08
- Detail design & construction documents/bid
  Eastern site: May ’08 ★
  Helena site: July ’08
- Contract/break ground
  Eastern site: July ’08 ★
  Helena site: September ’08
- Construction time estimate
  Eastern site: 9-12 months
  Helena site: 12-16 months

(★ may be affected by site selection process)

ESSC Preliminary Timeline



Project documents and most materials used during the 2007 Session are posted on MINE.
http://mine.mt.gov/it/pro/default.mcpx